

What is claimed is:

1 1. A method for use in assembling a microelectronic circuit package, comprising:
2 providing a package substrate;
3 applying a polymer material to a surface of said package substrate;
4 attaching pins to said package substrate, through said polymer material, by
5 solder reflow; and
6 allowing said polymer material to cure about solder joints associated with said
7 pins.

1 2. The method of claim 1, wherein:
2 attaching pins includes placing solder elements in the polymer material in
3 desired pin locations.

1 3. The method of claim 2, wherein:
2 said solder elements include solder balls.

1 4. The method of claim 2, wherein:
2 attaching pins includes pressing a pin toward said package substrate at the
3 location of a solder element.

1 5. The method of claim 2, wherein:
2 attaching pins includes using a jig to press multiple pins toward said package
3 substrate at the locations of solder elements.

1 6. The method of claim 1, wherein:
2 applying a polymer material includes screen printing said material on said
3 surface.

1 7. The method of claim 1, wherein:
2 attaching pins to said package substrate includes placing said pins in a jig and
3 applying pressure to said jig at a temperature that equals or exceeds a melting
4 temperature of the pin solder so that the pins are pressed through the polymer material.

1 8. The method of claim 1, wherein:
2 said polymer material includes a no flow material.

1 9. The method of claim 1, wherein:
2 said polymer material has fluxing capabilities.

1 10. A method for use during fabrication of a microelectronic device package,
2 comprising:
3 providing a package substrate having a plurality of contact pads on a surface
4 thereof;
5 attaching pins to said plurality of contact pads by solder reflow; and
6 applying an encapsulation material about solder joints associated with said pins,
7 said encapsulation material to maintain a location of said pins on said package substrate
8 during subsequent high temperature processing.

1 11. The method of claim 10, wherein attaching pins includes:
2 placing said pins in a jig;
3 applying solder to at least one of the following: said pins and said contact pads;
4 aligning said jig with said package substrate; and
5 applying pressure to said jig at a temperature that equals or exceeds a melting
6 temperature of said solder.

1 12. The method of claim 10, wherein:
2 applying an encapsulation material includes applying a no flow material.

1 13. The method of claim 10, wherein:
2 said encapsulation material includes at least one of the following: an epoxy-
3 based material and a polyimide-based material.

1 14. A substrate for use in a microelectronic circuit package, comprising:
2 a plurality of pin contact pads on a first surface of said substrate;
3 a plurality of pins soldered to pin contact pads on said first surface of said
4 substrate; and
5 an encapsulation material surrounding solder joints associated with said
6 plurality of pins, said encapsulation material preventing movement of pins when said
7 substrate is subjected to high temperatures.

1 15. The substrate of claim 14, wherein:
2 said encapsulation material includes a polymer material.

1 16. The substrate of claim 14, wherein:
2 said encapsulation material includes a no flow material.

1 17. The substrate of claim 14, wherein:
2 said encapsulation material includes at least one of the following: an epoxy-
3 based material and a polyimide-based material.

1 18. A microelectronic device comprising:
2 a package substrate having pin contact pads on a first surface thereof;
3 a plurality of pins soldered to said pin contact pads on said first surface of said
4 package substrate;
5 an encapsulation material surrounding solder joints associated with said
6 plurality of pins, said encapsulation material preventing movement of pins when said
7 microelectronic device is subjected to high temperatures; and

8 a microelectronic die connected to said package substrate, said microelectronic
9 die having bond pads that are conductively coupled to said pins through said package
10 substrate.

1 19. The microelectronic device of claim 18 wherein:
2 said microelectronic die is connected to said package substrate using a lead free
3 solder having a relatively high melting temperature.

1 20. The microelectronic device of claim 18 wherein:
2 said encapsulation material includes a polymer material.

1 21. The microelectronic device of claim 18 wherein:
2 said encapsulation material includes a no flow material.

1 22. The microelectronic device of claim 18 wherein:
2 said encapsulation material includes at least one of the following: an epoxy-
3 based material and a polyimide-based material.

1 23. The substrate of claim 15 wherein:
2 said polymer material comprises a cured polymer material.

1 24. The substrate of claim 15 wherein:
2 said polymer material has fluxing capabilities.

1 25. The substrate of claim 15 wherein:
2 said polymer material is selected from the group consisting of one or more of
3 Cookson 2071E, Questech EF71 or LF-8, Advanced Polymer Solutions (APS) UFR
4 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-100-1,
5 Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

1 26. The microelectronic device of claim 20 wherein:
2 said polymer material comprises a cured polymer material.

1 27. The microelectronic device of claim 20 wherein:
2 said polymer material has fluxing capabilities.

1 28. The microelectronic device of claim 20 wherein:
2 said polymer material is selected from the group consisting of one or more of
3 Cookson 2071E, Questech EF71 or LF-8, Advanced Polymer Solutions (APS) UFR
4 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-100-1,
5 Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

1 29. The microelectronic device of claim 18 wherein:
2 said microelectronic die is attached to said package substrate with a plurality
3 of die attach contact pads on the package substrate in contact with a corresponding

4 plurality of solder bumps on bond pads on a surface of said microelectronic die, the
5 solder bumps comprising a high melting temperature, lead-free solder.

1 30. The microelectronic device of claim 18, further comprising:
2 underfill material between said microelectronic die and said package
3 substrate.

1 31. A substrate for use in a microelectronic circuit package, comprising:
2 a plurality of pin contact pads on a first surface of said substrate;
3 a plurality of pins soldered to said pin contact pads on said first surface of said
4 substrate; and
5 a cured polymer material about solder joints associated with said pins.

1 32. The substrate of claim 31 wherein:
2 said cured polymer material has fluxing capabilities.

1 33. The substrate of claim 31 wherein:
2 said cured polymer material is selected from the group consisting of one or
3 more of Cookson 2071E, Questech EF71 or LF-8, Advanced Polymer Solutions
4 (APS) UFR 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-
5 100-1, Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

1 34. The substrate of claim 31, further comprising:
2 a microelectronic die attached to the substrate.

1 35. The substrate of claim 31 wherein:
2 a layer of said cured polymer material enshrouds a plurality of solder joints
3 associated with said pins.

- 1 36. The substrate of claim 31 wherein:
2 a separate portion of said cured polymer material enshrouds an individual
3 solder joint associated with each of said pins.
- 1 37. A microelectronic device comprising:
2 a package substrate having pin contact pads on a first surface thereof;
3 a plurality of pins soldered to said pin contact pads on said first surface of said
4 package substrate;
5 a cured polymer material about solder joints associated with said pins; and
6 a microelectronic die connected to said package substrate, said
7 microelectronic die having bond pads that are conductively coupled to said pins
8 through said package substrate.
- 1 38. The microelectronic device of claim 37, further comprising:
2 underfill material between said microelectronic die and said package
3 substrate.
- 1 39. The microelectronic device of claim 37 wherein:
2 said cured polymer material has fluxing capabilities.
- 1 40. The microelectronic device of claim 37 wherein:
2 said cured polymer material is selected from the group consisting of one or
3 more of Cookson 2071E, Questech EF71 or LF-8, Advanced Polymer Solutions
4 (APS) UFR 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-
5 100-1, Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

1 41. The microelectronic device of claim 37 wherein:
2 a layer of said cured polymer material enshrouds a plurality of solder joints
3 associated with said pins.

1 42. The microelectronic device of claim 37 wherein:
2 a separate portion of said cured polymer material enshrouds an individual
3 solder joint associated with each of said pins.

1 43. The microelectronic device of claim 37 wherein:
2 said microelectronic die is attached to said package substrate with a plurality of
3 die attach contact pads on the package substrate in contact with a corresponding
4 plurality of solder bumps on bond pads on a surface of said microelectronic die, the
5 solder bumps comprising a high melting temperature, lead-free solder.